CLAIMS

What is claimed is:

1. An integrated post-amplifier and laser driver assembly for use in connection with an optical receiver and an optical transmitter, comprising:

a post-amplifier assembly configured for communication with the optical receiver;

a laser driver assembly configured for communication with the optical transmitter;

a digital control interface in at least indirect communication with the post-amplifier assembly and the laser driver assembly; and

means for setting a signal parameter in response to signal parameter programming instructions, the signal parameter corresponding to a signal associated with at least one of: the post-amplifier assembly; and, the laser driver assembly.

2. The integrated post-amplifier and laser driver assembly as recited in claim 1, wherein the post-amplifier assembly and laser driver assembly are integrated together in a single IC.

3. The integrated post-amplifier and laser driver assembly as recited in claim 1, wherein the means for setting a signal parameter enables dynamic control of one or more signal parameters.

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4. The integrated post-amplifier and laser driver assembly as recited in claim 1, wherein the means for setting a signal parameter operates in response to signal parameter programming instructions received, at least indirectly, from one of: a user; and, an algorithm encoded within the integrated post-amplifier and laser driver assembly.

5. The integrated post-amplifier and laser driver assembly as recited in claim 1, wherein the means for setting a signal parameter enables implementation of a signal parameter change that corresponds to a change in thermal conditions associated with the integrated post-amplifier and laser driver assembly.

6. The integrated post-amplifier and laser driver assembly as recited in claim 1, wherein the signal to which the signal parameter corresponds is selected from the group consisting of: control signals; data signals; power signals; and, monitor signals.

7. The integrated post-amplifier and laser driver assembly as recited in claim 1, wherein the digital control interface comprises a serial digital interface.

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8. The integrated post-amplifier and laser driver assembly as recited in claim 1, further comprising a means for controlling signal polarity arranged for operation with respect to a data signal associated with the integrated post-amplifier and laser driver assembly.

9. The integrated post-amplifier and laser driver assembly as recited in claim 1, further comprising a feedback loop configured and arranged for operation with respect to the signal to which the signal parameter corresponds.

10. The integrated post-amplifier and laser driver assembly as recited in claim 1, wherein the integrated post-amplifier and laser driver assembly is compatible with a plurality of protocols and line rates.

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11. In a high-speed data communications system that includes an optical receiver and an optical transmitter, an integrated post-amplifier and laser driver assembly, comprising:

a post-amplifier assembly configured for communication with the optical receiver;

a laser driver assembly configured for communication with the optical transmitter and implemented together with the post-amplifier assembly in a single IC;

a digital control interface;

a glue logic module in communication with the digital control interface and in at least indirect communication with the post-amplifier assembly and the laser driver assembly; and

a digital to analog converter configured to receive signal parameter programming instructions concerning the setting of a signal parameter, the digital to analog converter being in communication with the glue logic module and at least one of: the post-amplifier assembly; and, the laser driver assembly.

12. The integrated post-amplifier and laser driver assembly as recited in claim 11, wherein the digital to analog converter is configured to receive signal parameter programming instructions from at least one of: a user; and, an algorithm encoded within the integrated post-amplifier and laser driver assembly.

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13. The integrated post-amplifier and laser driver assembly as recited in claim 11, wherein the signal parameter programming instructions concern LOS assert and deassert thresholds.

14. The integrated post-amplifier and laser driver assembly as recited in claim 11, wherein the signal parameter is selected from the group consisting of: signal rise time; signal polarity; signal assert threshold; signal deassert threshold; signal fall time; signal amplitude; and, signal power.

15. The integrated post-amplifier and laser driver assembly as recited in claim 11, wherein the signal to which the signal parameter corresponds is selected from the group consisting of: control signals; data signals; power signals; and, monitor signals.

16. The integrated post-amplifier and laser driver assembly as recited in claim 11, further comprising an LOS circuit in at least indirect communication with the optical receiver and the digital control interface.

17. The integrated post-amplifier and laser driver assembly as recited in claim 11, further comprising a feedback loop configured and arranged for operation with respect to the signal to which the signal parameter corresponds.

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18. The integrated post-amplifier and laser driver assembly as recited in claim 11, wherein the post-amplifier assembly includes an amplifier having a data signal polarity control stage.

19. The integrated post-amplifier and laser driver assembly as recited in claim 11, wherein the integrated post-amplifier and laser driver assembly is compatible with a plurality of system protocols and line rates.

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20. An optical transceiver, comprising:

an optical transmitter;

an optical receiver;

a digital IC controller; and

an integrated post-amplifier and laser driver assembly in communication with the digital IC controller, the integrated post-amplifier and laser driver assembly being programmable with respect to at least one signal parameter of at least one signal, and comprising:

a post-amplifier assembly configured for communication with the optical receiver;

a laser driver assembly configured for communication with the optical transmitter; and

a digital control interface in communication with the digital IC controller and in at least indirect communication with the post-amplifier assembly and the laser driver assembly.

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21. The optical transceiver as recited in claim 20, wherein the integrated post-amplifier and laser driver assembly is configured to receive signal parameter programming instructions from at least one of: a user; and, an algorithm encoded within the optical transceiver.

22. The optical transceiver as recited in claim 20, wherein the at least one signal to which the at least one signal parameter corresponds is selected from the group consisting of: control signals; data signals; power signals; and, monitor signals.

23. The optical transceiver as recited in claim 20, wherein the at least one signal parameter is selected from the group consisting of: signal rise time; signal polarity; signal assert threshold; signal deassert threshold; signal fall time; signal amplitude; and, signal power.

24. The optical transceiver as recited in claim 20, further comprising:

a glue logic module in communication with the digital control interface; and

at least one digital to analog converter configured to receive signal parameter programming instructions, the at least one digital to analog converter being in communication with the glue logic module and at least one of: the post-amplifier assembly; and, the laser driver assembly.

25. The optical transceiver as recited in claim 24, wherein the at least one digital to analog converter is configured to receive the signal parameter programming instructions from at least one of: a user; and, an algorithm internally encoded in the integrated post-amplifier and laser driver assembly.

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26. The optical transceiver as recited in claim 20, further comprising an LOS circuit in at least indirect communication with the optical receiver and the digital IC controller.

27. The optical transceiver as recited in claim 20, further comprising a feedback loop configured and arranged for operation with respect to the at least one signal to which the at least one signal parameter corresponds.

28. The optical transceiver as recited in claim 20, wherein the post-amplifier assembly includes an amplifier having a data signal polarity control stage.

29. The optical transceiver as recited in claim 20, wherein the post-amplifier assembly and laser driver assembly are integrated together in a single IC.

30. The optical transceiver as recited in claim 20, wherein the digital IC controller includes an I2C bus through which signal parameter programming instructions can be passed.

31. The optical transceiver as recited in claim 20, wherein the optical receiver comprises a 'receive' optical subassembly.

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32. The optical transceiver as recited in claim 31, wherein the 'receive' optical subassembly comprises:

a transimpedance amplifier; and

a photodiode in communication with the transimpedance amplifier.

33. The optical transceiver as recited in claim 20, wherein the optical transmitter comprises a 'transmit' optical subassembly.

34. The optical transceiver as recited in claim 33, wherein the 'transmit' optical subassembly comprises:

a laser; and

a photodiode in communication with the laser.

35. The optical transceiver as recited in claim 34, wherein the laser comprises a VCSEL.

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36. The optical transceiver as recited in claim 20, wherein the optical transceiver is compatible with a plurality of system protocols and line rates

37. The optical transceiver as recited in claim 20, wherein the integrated post-amplifier and laser driver assembly is configured so that programming implemented with respect to the at least one signal parameter of at least one signal is based upon at least one of: system line rate; and, system protocol.

38. An integrated post-amplifier and laser driver assembly for use in connection with an optical receiver and an optical transmitter, comprising:

a post-amplifier assembly configured for communication with the optical receiver;

a laser driver assembly configured for communication with the optical transmitter;

a digital control interface;

an LOS circuit in at least indirect communication with the optical receiver and the digital control interface;

a glue logic module in communication with the digital control interface; and

a digital to analog converter configured to receive signal parameter programming instructions concerning the setting of LOS assert and deassert thresholds, the digital to analog converter being in communication with the glue logic module and at least one of: the post-amplifier assembly; and, the laser driver assembly.

39. The integrated post-amplifier and laser driver assembly as recited in claim 38, wherein the digital to analog converter is configured to receive signal parameter programming instructions from at least one of: a user; and, an algorithm encoded within the integrated post-amplifier and laser driver assembly.

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40. The integrated post-amplifier and laser driver assembly as recited in claim 38, wherein the LOS circuit is configured to receive first and second signals, the first signal corresponding to strength of an optical signal received at the integrated post-amplifier and laser driver, and the second signal being received from the digital to analog converter and corresponding to an LOS assert threshold if no LOS signal has been asserted by the LOS circuit, and the second signal corresponding to an LOS deassert threshold if an LOS signal has been asserted by the LOS circuit, the LOS circuit asserting or deasserting the LOS signal as dictated by a relationship collectively defined by the first and second signals.

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41. A computer program product for implementing a method for controlling the performance of an optical transceiver, the computer program product comprising:

a computer readable medium carrying computer executable instructions for performing the method, wherein the method comprises:

accessing information concerning a signal parameter corresponding to a signal associated with the optical transceiver;

setting the signal parameter to a value consistent with the information thus accessed; and

repeating, if required, the process of accessing information and the process of setting the signal parameter.

42. The computer program product as recited in claim 41, wherein at least the accessing information and the setting signal parameter processes are performed automatically as a result of the occurrence of a predefined event.

43. The computer program product as recited in claim 41, wherein the predefined event comprises one of: a line rate change; and a change in thermal conditions associated with the optical transceiver.

44. The computer program product as recited in claim 41, wherein the signal parameter is selected from the group consisting of: signal rise time; signal polarity; signal assert threshold; signal deassert threshold; signal fall time; signal amplitude; and, signal power.

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45. The computer program product as recited in claim 41, wherein the signal to which the signal parameter corresponds is selected from the group consisting of: control signals; data signals; power signals; and, monitor signals.

46. The computer program product as recited in claim 41, wherein the method implemented thereby further comprises:

accessing feedback information concerning the signal parameter; and

using the feedback information to facilitate maintenance of the signal parameter within a predetermined range of the set value until a resetting of the signal parameter occurs.

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